# APPENDIX III

## ADMINISTRATIVE RECORD INDEX

Document Number: HFM-001-1643 To 1656 Date: / /

Title: (Tax maps of Franklin Township, Somerset County, NJ and South Brunswick Township, Middlesex County, NJ)

Type: GRAPHIC
Author: Rimmey, William M.: none
Recipient: none: none

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Document Number: HFM-001-0001 To 0001 Date: / /

Title: (Note to file: The Administrative Record for the Higgins Farm site, Operable Unit 1, was completed in June 1990, and is available at the EPA Public Records Center, 26 Federal Plaza, New York, NY)

Type: OTHER
Author: none: none
Recipient: none: none

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Document Number: HFM-001-1686 To 1686 Parent: HFM-001-1682 Date: 01/08/88

Title: (Letter discussing results of dioxin testing of milk and tissue sampling taken at the Higgins Farm)

Type: CORRESPONDENCE
Author: Nusbaum, Sidney R.: NJ Dept of Agriculture
Recipient: Higgins, Mr. & Mrs. Cliff: none

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Document Number: HFM-001-1684 To 1685 Parent: HFM-001-1682 Date: 01/15/88

Title: (Memo discussing the results of Higgins Farm cow sampling performed in August 1987)

Type: CORRESPONDENCE
Author: Kunze, Kathleen: NJ Department of Environmental Protection (NJDEP)
Recipient: various: distribution list

Document Number: HFM-001-0033 To 0235 Date: 12/01/89

Title: Work Plan - Remedial Planning Activities at Higgins Farm, Franklin Township, Somerset, New Jersey

Type: PLAN
Author: none: CH2M Hill
Recipient: none: Malcolm Pirnie, Inc.

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Document Number: HFM-001-0002 To 0032 Date: 04/10/92

Title: Action Memorandum: Request for a $2 Million Exemption and Removal Action at the Route 518/Higgins Farm Site, Franklin Township, Somerset County, New Jersey

Type: CORRESPONDENCE
Author: Pane, Mark P.: US EPA
Recipient: Sidamon-Eristoff, C.: US EPA

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Document Number: HFM-001-0236 To 0516 Date: 06/01/92

Title: Draft Final Remedial Investigation Report - Higgins Farm, Franklin Township, Somerset, New Jersey - Volume 1 of 2

Type: REPORT
Condition: DRAFT
Author: none: CH2M Hill
none: Malcolm Pirnie, Inc.
Recipient: none: US EPA

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Document Number: HFM-001-0517 To 1168 Date: 06/01/92

Title: Draft Final Remedial Investigation Report - Higgins Farm, Franklin Township, Somerset, New Jersey - Volume 2 of 2

Type: REPORT
Condition: DRAFT
Author: none: CH2M Hill
none: Malcolm Pirnie, Inc.
Recipient: none: US EPA

Document Number: HFM-001-1373 To 1378 Date: 06/09/92

Title: (Letter clarifying two issues regarding the Human Health and Environmental Risk Assessment raised during the preparation of the Remedial Investigation Report for the Higgins Farm site)

Type: CORRESPONDENCE
Author: Califano, Richard J.: Malcolm Pirnie, Inc.
Recipient: Harney, Joyce A.: US EPA

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Document Number: HFM-001-1169 To 1372 Date: 07/01/92

Title: Technical Memorandum: Human Health and Environmental Risk Assessment, Higgins Farm Site, Somerset County, New Jersey

Type: PLAN
Author: none: Malcolm Pirnie, Inc.
Recipient: none: US EPA

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Document Number: HFM-001-1379 To 1641 Date: 07/01/92

Title: Draft Final Feasibility Study Report, Higgins Farm Site, Somerset County, New Jersey

Type: REPORT
Author: none: Malcolm Pirnie, Inc.
Recipient: none: US EPA

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Document Number: HFM-001-1666 To 1676 Parent: HFM-001-1658 Date: 07/01/92

Title: Superfund Proposed Plan, Higgins Farm, Franklin Township, Somerset County, New Jersey

Type: PLAN
Author: none: US EPA
Recipient: none: none

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Document Number: HFM-001-1642 To 1642 Date: 07/06/92

Title: (Memo regarding an:) Assessment of Dermal Exposure Pathway for the Higgins Farm site

Type: CORRESPONDENCE
Author: Maddaloni, Mark: US EPA
Recipient: Harney, Joyce A.: US EPA

Document Number: HFM-001-1658 To 1665 Date: 07/14/92

Title: (Letter forwarding and discussing the enclosed Proposed Plan for the Higgins Farm site and stating that a public meeting will be held on August 3, 1992)

Type: CORRESPONDENCE
Author: Feldstein, Janet: US EPA
Recipient: distribution list: various
Attached: HFM-001-1666

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Document Number: HFM-001-1687 To 1688 Date: 07/28/92

Title: (Letter, on behalf of Princeton Gamma-Tech, Inc., requesting a 45-day extension of the public comment period for the Higgins Farm site)

Type: CORRESPONDENCE
Author: Stahl, Suzanne K.: Hannoch Weisman
Recipient: Harney, Joyce A.: US EPA

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Document Number: HFM-001-1677 To 1680 Date: 07/29/92

Title: (Press Release:) EPA to Hold Public Meeting to Discuss Cleanup for Superfund Site in Franklin Township, New Jersey

Type: CORRESPONDENCE
Author: Cahill, Rich: US EPA
Recipient: none: none

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Document Number: HFM-001-1681 To 1681 Date: 08/03/92

Title: Agenda: Public Meeting for the Higgins Farm Superfund Site, Franklin, New York (Please note: document is incorrect, should be New Jersey)

Type: PLAN
Author: none: US EPA
Recipient: none: none

Document Number: HFM-001-1689 To 1773 Date: 08/03/92

Title: (Public Meeting Transcript) In the Matter of: The Superfund Proposed Plan of the Higgins Farm, Franklin Township, Somerset County, New Jersey

Type: LEGAL DOCUMENT
Author: Ungerleider, Ruthanne: Schulman, Ciccarelli & Wiegmann
Recipient: various: US EPA

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Document Number: HFM-001-1774 To 1774 Date: 08/07/92

Title: (Letter, in response to a July 28, 1992, letter, granting a 30-day extension of the public comment period for the Higgins Farm site)

Type: CORRESPONDENCE
Author: Harney, Joyce A.: US EPA
Recipient: Stahl, Suzanne K.: Hannoch Weisman

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Document Number: HFM-001-1657 To 1657 Date: 08/13/92

Title: (Letter discussing an area at the Higgins Farm site designated in the Remedial Investigation Report as the "NJDEPE" fenced area)

Type: CORRESPONDENCE
Author: Horwitz, Gil: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce A.: US EPA

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Document Number: HFM-001-1775 To 1778 Date: 08/14/92

Title: (Section 107(a) and Section 122(e) Notice Letter, with attachments)

Type: CORRESPONDENCE
Author: Callahan, Kathleen C.: US EPA
Recipient: Popoff, Frank P.: Dow Chemical

Document Number: HFM-001-1682 To 1683 Date: 08/18/92

Title: (Letter discussing issues raised during the August 3, 1992, public meeting regarding the accuracy of the Administrative Record for the Higgins Farm site)

Type: CORRESPONDENCE
Author: Horwitz, Gil: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce A.: US EPA
Attached: HFM-001-1684 HFM-001-1686

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Document Number: HFM-001-1779 To 1780 Date: 08/18/92

Title: (Letter, on behalf of Princeton Gamma-Tech, Inc., stating that EPA's 30-day extension of the public comment period is insufficient and requesting an additional two week extension)

Type: CORRESPONDENCE
Author: Stahl, Suzanne K.: Hannoch Weisman
Recipient: Harney, Joyce A.: US EPA

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Document Number: HFM-001-1781 To 1781 Date: 08/19/92

Title: (Letter containing a Freedom of Information Act (FOIA) request that EPA send Dow Chemical copies of all the documents EPA relied upon in its decision to send Dow a 107(a) Notice Letter)

Type: CORRESPONDENCE
Author: Rooks, Sydney: Dow Chemical
Recipient: Harney, Joyce A.: US EPA

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Document Number: HFM-001-1782 To 1783 Date: 08/27/92

Title: (Letter, in response to an August 18, 1992, letter, granting a second extension of the public comment period to September 18, 1992)

Type: CORRESPONDENCE
Author: Harney, Joyce A.: US EPA
Recipient: Stahl, Suzanne K.: Hannoch Weisman

Document Number: HFM-001-1784 To 1828 Date: 09/01/92

Title: Remedial Investigation and Feasibility Study Reports Addendum (for the Higgins Farm site)

Type: REPORT
Author: Krishnaswami, S. Kris: Malcolm Pirnie, Inc.
Monserrate, Martha: Malcolm Pirnie, Inc.
none: CH2M Hill
Recipient: none: US EPA

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Document Number: HFM-001-1835 To 1868 Parent: HFM-001-1833 Date: 09/01/92

Title: Technical Evaluation of Draft Final RI and FS Reports for the Higgins Farm Site, Somerset County, New Jersey

Type: PLAN
Author: none: ENSR
Recipient: none: FMC Corporation

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Document Number: HFM-001-1829 To 1832 Date: 09/16/92

Title: (Letter, in response to an August 19, 1992, letter, explaining why EPA named Dow Chemical as a potentially responsible party at the Higgins Farm site)

Type: CORRESPONDENCE
Author: Harney, Joyce A.: US EPA
Recipient: Rooks, Sydney: Dow Chemical

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Document Number: HFM-001-1833 To 1834 Date: 09/18/92

Title: (Letter forwarding FMC Corporation's comments on EPA's Proposed Plan for the Higgins Farm site)

Type: CORRESPONDENCE
Author: Klass, Kenneth M.: Blank, Rome, Comisky & McCauley
Recipient: Harney, Joyce A.: US EPA
Attached: HFM-001-1835

Document Number: HFM-001-1869 To 1869 Date: 10/09/92

Title: (Letter stating that Dow Chemical does not believe it is a potentially responsible party and requesting that EPA send Dow any additional information linking Dow to the Higgins Farm site)

Type: CORRESPONDENCE
Author: Rooks, Sydney: Dow Chemical
Recipient: Harney, Joyce A.: US EPA

ADMINISTRATIVE RECORD ADDENDUM

Title: Public Meeting Minutes, Operable Unit #2, Higgins Farm Site, Franklin Township, New Jersey

Date: August 3, 1992
Type: Report
Author: Ruthanne Ungerleider, C.S.R. (Schulman, Ciccarelli & Wiegmann)
Recipient: US EPA

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Title: Technical Evaluation of Draft Final RI and FS Reports for the Higgins Farm Site, Somerset County, New Jersey (Letter to Joyce Harney comments prepared for FMC Corporation, submitted to US EPA during the public comment period)

Date: September 18, 1992
Type: Correspondence and Report
Author: ENSR Consulting and Engineering
Recipient: Harney, Joyce: US EPA

---

Title: Addendum to the Remedial Investigation and Feasibility Study Reports

Date: September 1992
Type: Report
Author: CH2M Hill
Recipient: US EPA

---

Title: (Memo to file regarding interpretation of the Dermal exposure to soil-borne contaminants at the Higgins Farm Site)

Date: July 1992
Type: Correspondence
Author: Harney, Joyce US EPA
Recipient: Higgins Farm Site File

Title: (Letter requesting a 45-day extension of the public comment period)

Date: August 18, 1992
Type: Correspondence
Author: Stahl, Suzanne: Hannoch Weisman, Counselors at Law for Princeton Gamma Tech, Inc.
Recipient: Harney, Joyce: US EPA

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Title: (Letter granting 30-day extension of the public comment period)

Date: August 7, 1992
Type: Correspondence
Author: Harney, Joyce: US EPA
Recipient: Stahl, Suzanne: Hannoch Weisman

---

Title: (Letter extending the public comment period to September 18, 1992)

Date: August 1992
Type: Correspondence
Author: Harney, Joyce: US EPA
Recipient: Stahl, Suzanne: Hannoch Weisman

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Title: (Notice Letter to two potentially responsible parties)

Type: Correspondence
Author: Basso, Raymond: US EPA
Recipients: Hetzer, Thomas, Vice President: NCH Corporation
Popoff, Frank, President: Dow Chemical Corporation

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Title: (Letter in response to Notice Letter)

Date: August 19, 1992
Type: Correspondence
Author: Rooks, Sydney, Senior Attorney: Dow Chemical Company
Recipient: Harney, Joyce: US EPA

Title: (Letter to Dow Chemical Company in response to information request regarding their liability)

Date: September 16, 1992
Type: Correspondence
Author: Harney, Joyce A.: US EPA
Recipient: Rooks, Sydney, Senior Attorney: Dow Chemical Company

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Title: (Letter regarding EPA's Proposed Plan)

Type: Correspondence
Author: Palmquist, Robert: Resident
Recipient: Harney, Joyce: US EPA

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Title: (Letter regarding EPA's Proposed Plan)

Type: Correspondence
Author: Wilkes, Kevin: Resident
Recipient: Harney, Joyce: US EPA

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Title: (Letter regarding EPA's Proposed Plan)

Type: Correspondence
Author: Lewis, John & June: Residents
Recipient: Harney, Joyce: US EPA

# APPENDIX IV

## STATE LETTER OF CONCURRENCE

# APPENDIX V

## RESPONSIVENESS SUMMARY

**RESPONSIVENESS SUMMARY**
**HIGGINS FARM SUPERFUND SITE**
**FRANKLIN TOWNSHIP, NEW JERSEY**

This community relations responsiveness summary is divided into the following sections:

I. Overview: This section discusses the U.S. Environmental Protection Agency's (EPA's) preferred alternative for remedial action.

II. Background: This section briefly describes community relations activities related to the second operable unit at the Higgins Farm site.

III. Public Meeting Comments and EPA Responses: This section provides a summary of commentors' major issues and concerns, and expressly acknowledges and responds to all significant comments raised at the public meeting.

IV. Response to Written Comments: This section provides a summary of, and responses to, written comments received during the public comment period.

## I. OVERVIEW

At the initiation of the public comment period on July 15, 1992, EPA presented its preferred alternative for the second operable unit at the Higgins Farm site located in Franklin Township, New Jersey. The first operable unit involved an interim remedy which provided for the installation of a water line to provide the potentially affected residents with an alternate water supply. The second operable unit addresses remediation of contaminated ground water related to the site.

The selected remedy for the second operable unit includes extraction of contaminated ground water underlying the site, treatment and discharge of the treated ground water to the on-site surface water body. In addition, the selected remedy provides for a ground-water monitoring program to evaluate the effectiveness of the extraction and treatment system.

## II. BACKGROUND

The Remedial Investigation and Feasibility Study (RI/FS) and the Proposed Plan for the Higgins Farm Operable Unit Two remedy were released to the public on July 15, 1992. These documents were made available to the public in the administrative record file, located at the information repositories maintained at the EPA Superfund Records Center at EPA's Region II office in New York City, at the Mary Jacobs Memorial Library in Rocky Hill, New Jersey and at the Franklin Public Library in Somerset, New Jersey. The notice of availability for these documents was published in the Home News on July 15, 1992. The public was given the opportunity to comment on the

preferred alternative during the public comment period which began on July 15 and concluded on September 18, 1992. In addition, a public meeting was held on August 3, 1992 at the Franklin Township Municipal Building. At this meeting, representatives from EPA answered questions concerning the site and the remedial alternatives under consideration. Responses to the comments received during the comment period, including the public meeting, are provided in this Responsiveness Summary.

## III. PUBLIC MEETING COMMENTS AND EPA RESPONSES

The questions and comments raised during the public meeting can be grouped into the following categories:

A. Status of the Water Line Project

B. EPA's Preferred Alternative (Alternative 3)

C. Issues Regarding Potentially Responsible Parties

D. Community Concerns Regarding Real Estate Values

E. Site History

Each question or comment is followed by EPA's response.

### A. Status of the Water Line Project

1. **A resident and a member of the Franklin Township Council asked when EPA expected to receive the contractors' bids for the construction of the water line, and if the request for proposals called for work to be completed in 1992.**

   **EPA Response:** EPA received bids for the construction of the water line on September 8, 1992, and expects to award the contract shortly. Construction activities are expected to begin in October, and should be completed in late 1992 or early 1993.

2. **A resident asked if the contractors who install the water line will also install the lateral connections to the individual homes, and when this would occur.**

   **EPA Response:** The lateral connections will likely be installed by two or three different contractors in order to expedite completion of the project. The number of contractors will be determined during construction activities, as it is based on

contractor availability and cost. As installation of the water line progresses, the lateral connections will be installed concurrently.

3. **A resident asked who would be paying for the lateral connections to the water line.**

   **EPA Response:** EPA will be responsible for the cost of the lateral connections, as well as installation of the water line.

4. **A resident asked if the installation of the water line would also include fire hydrants.**

   **EPA Response:** Franklin Township will provide fire hydrants and will fund the incremental cost of installing a larger diameter water line, in order to address possible future needs of the community.

5. **A representative from the Franklin Township Health Department expressed concern regarding scheduling problems for residential well sampling. He stated that in the past, EPA's contractors have not kept scheduled appointments for sampling residents' wells. The Health Department would like to work with EPA to avoid this occurring in the future.**

   **EPA Response:** EPA was not aware of the scheduling problems, but is not disputing that there may have been instances of miscommunication. EPA appreciates the assistance of local officials in coordinating site activities, and will keep the Township informed of sampling events. EPA's On-Scene Coordinator, Mike Ferriola, is EPA's contact for carbon unit maintenance, sampling and the water line installation. Mike can be reached at (908) 422-2265. Mike will discuss this issue with the sampling contractors, and try to ensure that, in the future, scheduled appointments are kept.

B. **EPA's Preferred Alternative (Alternative 3)**

1. **A member of the Franklin Township Council stated that the preferred alternative, Alternative 3, seemed like the most thorough approach and asked when EPA expected the remedy to be implemented.**

   **EPA Response:** Once the Record of Decision is signed, EPA will offer the potentially responsible parties (PRPs) an opportunity to implement the design and construction of the ground-water remedy. If no agreement is secured, EPA may issue a unilateral administrative order to compel the PRPs to implement the remedy or procure a contractor to design the ground-water extraction and treatment system. The design will take approximately one year to complete. Once the design is completed, EPA will solicit bids for construction of the

remedy. It is expected that construction will be initiated in 1994.

2. **A resident asked how the ground water would be extracted from the aquifer and what would comprise the treatment system.**

   **EPA Response:** Ground water will be pumped from extraction wells into piping, which will direct the extracted ground water to the treatment system. The treatment system is expected to include metals precipitation, flocculation, clarification, and filtration, followed by aeration (air stripping), intermediate pH adjustment, ion exchange, and final pH adjustment. The treated ground water will then be discharged to the on-site surface water body located in the eastern portion of the property.

3. **A resident asked if the extraction wells would address shallow ground water as well as the ground water in the bedrock aquifer.**

   **EPA Response:** During the RI, EPA installed both shallow and deep monitoring wells. Although some contamination was observed in shallow monitoring wells, the most severe contamination was shown in the deeper bedrock aquifer. EPA has not yet designed the ground-water extraction system; however, the extraction wells may serve to capture ground water from the shallow aquifer, as well as the deeper bedrock aquifer. The objective in designing the remedy will be to extract and treat as much contaminated ground water as is technically feasible.

4. **A resident expressed concern that Alternative 3 would tend to draw the ground water away from the source areas toward the edge of the property. The resident stated that the source area extraction system of Alternative 2, combined with the proposed off-site monitoring, would more easily and inexpensively handle the ground-water contamination.**

   **EPA Response:** EPA identified the two source areas through extensive soil sampling on the site. These source areas may not correspond precisely with the most severe ground-water contamination detected. This is due to the complex nature of the fractured bedrock beneath the site. It is rather difficult to determine the exact nature of ground-water flow through the fractured bedrock, and how pumping at one well location may affect another. Therefore, EPA has conceptually designed a system that will ring the entire site with extraction wells (in addition to the source areas) to attempt to extract as much of the contaminated ground water as possible. The treatment system will be regularly monitored for effectiveness in containing and treating the contaminated ground water.

5. **The mayor of Franklin Township asked if EPA had received any comments that would steer the Agency away from Alternative 3.**

**EPA Response:** As of the date of the public meeting, all written comments received by EPA support Alternative 3 as the preferred alternative.

**C. Issues Regarding Potentially Responsible Parties (PRPs)**

1. **A member of the Franklin Township Council asked whether EPA had determined who dumped the waste at Higgins Farm, and whether there was a prosecution case against those parties who are responsible.**

**EPA Response:** EPA has determined that certain companies used Higgins Disposal Service for the disposal of their waste. From this list of Mr. Higgins' customers, EPA has identified approximately seven PRPs whose waste may have been disposed of at the Higgins Farm site. These PRPs have been offered the opportunity to finance or implement work at this site, including the removal action, the RI/FS and the installation of the water line. Each time such an offer was made, the PRPs declined to finance or perform the work. Therefore, to date, EPA has financed and performed all work at the site. If no agreement is reached with the PRPs for the implementation of future work and/or recovery of costs, EPA may recover its costs through legal actions.

**D. Community Concerns Regarding Real Estate Values**

1. **A resident stated that living near a Superfund site has a detrimental effect on the value of homes. The resident asked when the homes would no longer be considered part of a Superfund site, and if the installation of the water line would have any effect on this designation.**

**EPA Response:** With the exception of the homes located on the Higgins Farm property, EPA has not designated any homes as being part of the Higgins Farm Superfund site. The installation of the water line to affected residents represents an interim solution to protect public health, but does not serve to remediate contaminated ground water. The Higgins Farm site will be considered a Superfund site until all the contamination is removed from the aquifer, or until EPA believes that we have removed as much contamination as is technically feasible. Once EPA makes this determination, the site may be deleted from the Superfund National Priorities List.

**E. Site History**

1. **Mrs. Julie Higgins requested that EPA correct its records regarding the use of the cattle that are bred and raised at the site. EPA's records state**

**that the cattle are used for breeding purposes only, and not used for milk or sold for beef. According to Mrs. Higgins, the cattle are bred on the Higgins Farm site and then sold for human consumption. In addition, she stated that the results of tissue and milk samples taken from the cows were not indicative of a problem.**

**EPA Response:** EPA acknowledged Mrs. Higgins concern over the misinformation in the records and agreed to make the appropriate corrections, as noted in this Record of Decision.

2. **A resident stated concern over finding inconsistencies regarding Mr. Higgins' site activities in EPA's Proposed Plan, and the characterization of Mr. Higgins as a "perpetrator" rather than a potentially responsible party.**

**EPA Response:** EPA clarified the site history as follows: In January 1986, Mr. Higgins initiated cleanup activities, including drum excavation at the site. The excavation was halted by the New Jersey Department of Environmental Protection and Energy (NJDEPE) as the activity was not approved by NJDEPE. On February 24, 1986, the NJDEPE issued a directive to Mr. Higgins instructing him to implement a remedial action plan. On April 7, 1986, Mr Higgins' contractor, O.H. Materials, began excavating the drum site. A total of fifty containers, including drums, were excavated; some of their contents spilled into the excavation pit. Liquids were pumped into a holding tank and visibly contaminated soil was placed into two roll-off containers. O.H. Materials' contract with Mr. Higgins was terminated after several days due to payment disputes. On March 23, 1987, NJDEPE formally requested that EPA assume the lead role in mitigating the site. The request specifically asked that EPA conduct a surface cleanup and subsurface evaluation in the excavation pit area, as well as provide security and fencing around the area. On April 8, 1987, EPA initiated the activities to stabilize the site and to control the release of hazardous substances into the environment.

Statements in the Proposed Plan indicate that Mr. Higgins' original excavation activities were conducted without NJDEPE approval, which is an accurate characterization according to EPA's records.

EPA has not made any statements characterizing Mr. Higgins as a perpetrator in the Proposed Plan, or any other documents pertaining to the Higgins Farm site. However, Mr. Higgins has been notified of his potential liability with respect to the Higgins Farm site in accordance with Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended.

## IV. RESPONSE TO WRITTEN COMMENTS

Written questions and comments received during the public comment period can be grouped into the following categories:

A. Incomplete Vertical Delineation of Ground-Water Contamination

B. Identification of Dense Non-Aqueous Phase Liquids

C. Lack of Quantification of Anisotropic Aquifer Conditions

D. Premature Selection of Remedy

E. Inappropriate Selection of Remedy

F. Role of the Water Line

Each question or comment is followed by EPA's response.

### A. Incomplete Vertical Delineation of Ground-Water Contamination

1. **A representative of one of the PRPs commented that the vertical delineation of ground-water contamination is incomplete due to the extensive vertical portion of the aquifer that each bedrock well is monitoring. As a result contaminant concentrations at various depths cannot be distinguished.**

   **EPA Response:** EPA disagrees. The bedrock monitoring well construction requirements were developed based upon review of the characteristics of the site's geology as determined by preliminary field investigations and review of the regional geologic literature. The Trap Rock Industries quarry, located adjacent to the site, exhibits the same geologic units as beneath the site, and was investigated prior to installation of the monitoring wells. Bedrock in this area is highly fractured and faulted; the major fault is moderately to steeply dipping and extends through the entire rock section. Regional ground-water flow is dictated by the near-vertical orientation of the faults and fractures. Since ground-water flow in this setting is dictated by interconnected fractures and faults, EPA used the most cost-effective and efficient method of establishing the hydrogeologic characteristics of the deep bedrock; construction of single open borehole monitoring wells extending approximately 180 feet were examined for fracture orientation and permeability by coring and the use of packer tests.

   Furthermore, EPA did investigate the differences in contamination with depth. Monitoring wells were constructed to evaluate ground-water conditions in both

the shallow unconsolidated and deep bedrock zones underlying the site. The purpose of placing wells discretely in each zone was to determine whether contaminants were migrating from the shallow unconsolidated zone to the deep bedrock zone. The shallow unconsolidated zone wells were constructed with either five- or ten- foot length well screens. The deep bedrock zone monitoring wells were constructed in a manner which sealed them off from the shallow unconsolidated zone, (i.e., a six-inch diameter steel casing was installed from the surface into the bedrock).

Contaminants were detected above federal and state ground-water quality standards in both the shallow unconsolidated and deep bedrock zones, demonstrating that contaminants flowed from the shallow to the deep zone. Since ground-water flow, and consequently contaminant flow, is dictated by the fractures and faults in the deep bedrock zone, it was not crucial to this investigation to determine the differences in contaminant concentrations at various depths within the deep bedrock zone. Rather, the goal was to determine the nature and extent of contamination in the ground water and to gather information regarding the occurrence of fractures and faults underlying the site. Furthermore, the delineation of the vertical extent of ground-water contamination as suggested by the commenter (i.e., the installation of more monitoring wells at discrete vertical intervals) would have been far more costly and time consuming. Therefore, as stated above, the most cost-effective and efficient methodology was used to obtain this information

2. **A representative of one of the PRPs commented that the monitoring well construction employed at the Higgins Farm site violates both EPA guidance (Resource Conservation and Recovery Act (RCRA) Ground-Water Monitoring Technical Enforcement Guidance Document) and NJDEPE (Field Sampling Procedures Manual, May 1992) protocols for bedrock monitoring well construction.**

**EPA Response:** EPA disagrees. Bedrock monitoring well construction was consistent with EPA and NJDEPE guidance and protocols in effect at the time the monitoring wells were constructed. As discussed above in response to Comment A.1., the bedrock monitoring well construction was specifically tailored to the known subsurface conditions at the site. EPA and NJDEPE determined that the 180-foot open hole length was required to ascertain the exact nature of the fracture system underlying the site. The open hole length was deemed necessary to ensure sufficient intake of formation water.

As specified in the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (OSWER-9950.1/September 1986), geologic formations "...with low hydraulic conductivities can also necessitate the use of longer well screens to allow sufficient amounts of formation water to enter the well for

sampling." As specified in EPA's Handbook Ground Water Volume II: Methodology (EPA/625/6-90/016b), the monitoring interval "...and the depth at which it is placed depend, to a large degree, on the behavior of the contaminant as it moves through the unsaturated and saturated zones, and on the goal of the monitoring program."

The goals of the ground-water monitoring program at this Superfund site are not the same as the goals of the generic detection ground-water monitoring programs described in the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document. RCRA detection ground-water monitoring programs are specifically geared to hazardous waste management units at hazardous waste facilities; a RCRA detection monitoring system must be capable of immediately detecting a leak from a hazardous waste management unit. The Higgins Farm site is not a hazardous waste facility with hazardous waste management units, but rather, a cattle farm which was suspected to have been used for the disposal of hazardous substances. The goal of EPA's ground-water monitoring program, in this case, was to determine where hazardous substances may have been disposed and determine potential pathways for migration. Therefore, the bedrock monitoring wells were installed within the bounds of EPA guidance relevant to this particular situation.

In addition, the bedrock wells were installed at the Higgins Farm site in October 1990. The NJDEPE Sampling Procedure Manual cited by the commentor was published in May 1992. Consequently, EPA could not utilize NJDEPE's protocols, which limit the length of open boreholes to 25 feet, nearly two years before it was published. However, EPA did seek NJDEPE recommendations for the RI/FS program at this site. The bedrock monitoring well construction details were specified in the RI/FS Work Plan, which was reviewed by NJDEPE. NJDEPE concurred with the Work Plan's specifications.

**B. Identification of Dense Non-Aqueous Phase Liquids (DNAPLs)**

1. **A representative of one of the PRPs commented that EPA did not evaluate the potential for the presence of DNAPLs at the site, and that based on following site data, it is quite reasonable to suspect that DNAPLs are present at the site: 1) two of the residential wells sampled had concentrations greater than 1 part per million (ppm) of chlorinated volatile compounds; 2) several chlorinated compounds were detected in ground-water samples at 0.1% to 1.0% of their solubility limits; 3) the site was used for liquid waste disposal; and 4) numerous contamination anomalies exist across the site.**

**EPA Response:** EPA disagrees. The presence of DNAPLs was considered during remedial investigation activities at the site. The investigation included

visual observation, soil borings and sampling, ground water monitoring well installation and sampling, and excavation of numerous test pits across the site. At no time during these field investigations did EPA find evidence of the presence of DNAPLs.

However, according to EPA publication 9355.4-07FS, entitled **Estimating Potential for Occurrence of DNAPL at Superfund Sites**, January 1992, visual observations should not be considered the sole indicator of the presence of DNAPLs. According to this guidance, other conditions that indicate the potential for DNAPL at a site include the presence of DNAPL-related chemicals in ground water at levels greater than 1% of their effective solubility. As noted by the commentor, several chlorinated compounds were detected in ground-water samples at levels of 0.1% to 1.0% of their solubility limits, but not at levels greater than 1%. Therefore, the analytical data also does **not** indicate that DNAPL is present at the site.

The technical merit of the commentor's reference to the 1 ppm level is unclear. It is acknowledged that recent sample analysis of the two residential well samples did indicate the presence of trichloroethane at 1.1 ppm and chlorobenzene at 1.2 ppm.

With respect to disposal of liquid wastes at the site, although there is evidence of disposal of a wide variety of wastes at Higgins Farm, EPA does not believe that this necessarily leads to the conclusion that DNAPLS are present. Rather, when all site data and related information are analyzed together, the evidence suggests that DNAPLs are not present.

Furthermore, the "anomalies" in the levels of ground-water contamination across the site are a result of the presence of fractured bedrock. Fracture flow is not dictated by the usual "upgradient to downgradient" flow regime of an unconsolidated aquifer. Ground-water flow in a fractured bedrock system is non-uniform, making it difficult to ascertain the pattern of local ground-water flow. Consequently, EPA believes that it is the alignment of fractures in the bedrock and the corresponding preferential ground-water flow in a given area which accounts for these variations in contaminant levels, rather than DNAPLs.

## C. Lack of Quantification of Anisotropic Aquifer Conditions

**1. A representative of one of the PRPs commented that, as stated in the Feasibility Study, the data obtained during the pumping test does not conclusively verify that the aquifer is anisotropic and heterogeneous. In addition, the commentor stated that quantification of anisotropic conditions, which is necessary to evaluate the feasibility of a pump-and-treat remedy, was not conducted.**

**EPA Response:** EPA agrees with the commentor that the data obtained during the pumping test does not **conclusively** verify that the aquifer is anisotropic and heterogeneous.

However, the primary purpose of the pumping test at the Higgins Farm site was to provide information on the yield and drawdown of a potential extraction well to be used in a remediation system. This type of information was needed to determine if a pump-and-treat remedy was feasible at this site, as well as to estimate an approximate cost based on well yield. In addition, the pumping test data was used to calculate aquifer properties, based on distance/drawdown/ time data from the pumping well and the observation wells. Furthermore, since flow beneath the site is controlled by faults and fractures, it was important to ascertain whether the fractures at one location were connected to fractures at other locations. This pump test served all of the these goals satisfactorily.

One of the most important properties of an aquifer, and the ground water flowing within it, is hydraulic conductivity. Hydraulic conductivity is the capacity of a porous medium to transmit water. When hydraulic conductivity values show spatial variations within a geologic formation, the geologic formation is considered to be heterogeneous. When the hydraulic conductivity values show variations with the direction of measurement at any point in the formation, the formation is considered to be anisotropic. Although for some purposes, it may be important to quantify the exact degree to which the geologic formations underlying are heterogeneous and anisotropic (or homogeneous and isotropic), EPA disagrees with the commentor that it is necessary for evaluating the feasibility of a pump-and-treat remedy at this site. The pumping test that was conducted at the site demonstrated that a sufficient well yield was obtained to create a cone-of-depression which would capture contaminated ground water.

Finally, visual evidence of the aquifer's heterogeneity and anisotropy exists. The geologic formations underlying the Higgins Farm site are exposed in the adjacent quarry.

**D. Premature Selection of Remedy**

**1. A representative of one of the PRPs commented that the elimination of the containment technologies evaluated in the Feasibility Study was not based on sound technical premises and should be reconsidered as a possible remedy.**

**EPA Response:** EPA disagrees. The initial screening of technologies is based on technical implementability and effectiveness considering site-specific conditions, contaminant types and concentrations. As a result of this initial screening, those technologies that are either not implementable or would not be

effective due to site or waste characteristics are eliminated from further study.

Physical containment options evaluated during the initial screening of technologies included both vertical and horizontal barriers. Due to the geologic characteristics of the site, such containment options were screened out for the following reasons: there is no well-defined confining layer, which is necessary to support vertical or horizontal barriers; subsurface conditions at the site consist of fractured bedrock, and vertical barriers are generally applied in unconsolidated subsurface environments where soils can be excavated or sheet piles driven; and the most significant ground-water contamination occurs in the deeper bedrock at the site, at depths largely beyond the practical limits for slurry walls and grout curtains. EPA believes that containment will be achieved, to the extent practicable, through hydraulic control as part of the selected remedy.

2. **A representative of one of the PRPs commented that the lack of understanding of the anisotropic conditions should have initiated a pilot-scale treatability study, close to the source areas to simulate physical and chemical parameters of the proposed full-scale system, before selection of a remedy to determine if pump-and-treat technology is feasible for the site. The commentor recommended that this "pumping" treatability study be utilized as an interim measure to address the source areas while further delineating ground-water contamination at the site.**

**EPA Response:** EPA disagrees. As stated in response to comment C.1. above, the pumping tests conducted at the site were sufficient to provide information regarding the feasibility of pumping and the yield that could be expected, as well as to investigate the presence of aquifer anisotropy and heterogeneity. Based on these tests, EPA is confident that pump-and-treat technology is feasible for the Higgins Farm site. The design of the actual treatment system will include studies of aquifer characteristics to optimize the number and placement of extraction wells.

3. **A representative of one of the PRPs commented that, because of data gaps, including lack of a pilot scale pump and treat study, the need to reconsider containment technologies, the potential for DNAPLs, failure to properly delineate the vertical extent of contamination, and the failure to quantify anisotropy, EPA should not yet select a remedy for the site.**

**EPA Response:** EPA disagrees. As stated above in response to comments D.2., D.1., B.1., A.1., C.1., EPA does not believe there are any significant data gaps which warrant delaying a remedial decision. The RI showed that there are numerous ground-water contaminants present above federal and state ground-water quality standards, and that area residents depend on ground water for a

potable source of drinking water. Sufficient information has been obtained relative to both the nature of the contamination as well as how to address that contamination to move forward. Consequently, EPA has determined that active measures are necessary to control the migration of contaminants and remediate the ground water. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) provides that:

> "Remedial actions are to be implemented as soon as site data and information make it possible to do so." 40 CFR §300.430(a)(1).

Furthermore, EPA's Guidance entitled **"Considerations in Ground Water Remediation at Superfund Sites"**, OSWER Directive No. 9355.4-03, October 18, 1989, specifically provides recommendations to deal with the uncertainties associated with ground-water remediation. Among these recommendations, which are being applied to the Higgins Farm remedy selection, are 1) initiate response action early, 2) provide flexibility in the selected remedy to modify the system during operation, and 3) acknowledge the possibility that it may not be possible to completely restore the aquifer.

Although EPA acknowledges that there will be some uncertainty regarding the aquifer's response to remedy implementation (as noted in the Record of Decision), it is inappropriate to delay the implementation of the selected remedy.

4. **A representative of one of the PRPs commented that the 180-foot open boreholes in the deep bedrock monitoring wells will continue to act as conduits for the downward migration of ground-water contamination from the shallow aquifer to the bedrock aquifer.**

**EPA Response:** The near-vertical fractures in the bedrock are natural conduits for ground water to travel from the shallow overburden zone to the deep bedrock zone of the aquifer. Ground-water sample analysis showed that ground-water contamination is greater in the deep monitoring wells. As stated in response to comment A.1., this indicates that ground water, and consequently contamination, is migrating through the fractures via natural means to the deep bedrock zone. Thus, the presence of the 180-foot open boreholes will not necessarily exacerbate the ground-water contamination in the deep bedrock aquifer. Furthermore, it should be noted that there are a significant number of private residential wells in the vicinity of the site, which are of similar construction (open hole).

The proposed extraction system will utilize deep bedrock zone wells to extract contaminated ground water. Contamination will be extracted and treated from both the shallow overburden and deep bedrock zones as the two zones are

interconnected.

Any monitoring wells which will not be used in the proposed extraction or monitoring system will be sealed in accordance with NJDEPE regulations.

**E. Inappropriate Selection of Remedy**

1. **A representative of one of the PRPs commented that the selected pump-and-treat system associated with Alternative 3 will draw contamination from highly contaminated areas to less or uncontaminated areas, thus spreading contamination over a larger area. The commentor stated that Alternative 2, which involves pumping water from areas closer to the known source areas, would minimize the danger of spreading contamination, thus providing increased protection of human health and the environment.**

**EPA Response:** During operation of the proposed extraction and treatment system, it is likely that some less contaminated, or uncontaminated ground water will be extracted along with the contaminated ground water. The system will be designed as efficiently as possible with the goal of maximizing the amount of contaminated ground water extracted while minimizing the extraction of clean water. The proposed remedy focuses on the known source areas, as well as around the perimeter of the site where some of the highest levels of contamination have been detected. Pumping ground water from around the source areas only and ignoring highly contaminated ground water at the perimeter of the site would not be as protective since this approach would allow ground-water contaminants to continue to migrate from the site.

It is also important to note that all ground water which is extracted (regardless of degree of contamination) will be treated to acceptable levels and discharged to the surface water body located at the site.

2. **A representative of one of the PRPs commented that although Alternative 3 was selected, in part, for its ability to capture contamination from possible unknown sources at the site, upgradient sources cannot be ruled out due to incomplete definition of upgradient ground-water quality conditions.**

**EPA Response:** As stated in response to comment A.1., ground-water flow at the site is dictated by a system of fractures and faults. Due to the complex geologic conditions, it is difficult to ascertain the pattern of local ground-water flow (although there is a general pattern of regional flow from northeast to south-southwest). Therefore, EPA believes that characterizing the local flow pattern to an upgradient vs. downgradient direction may be an over-

simplification and inappropriate in this situation. EPA has no evidence to suggest that there are other sources of ground-water contamination which impact the site.

EPA selected Alternative 3 in order to take the most aggressive approach to ground-water remediation and attempt to restore the aquifer to its beneficial uses.

3. **A representative of one of the PRPs commented that the selection of the thirty-year life expectancy for Alternative 3 is arbitrary as the actual time required for the proposed ground-water cleanup is not known. In addition, the commentor stated that calculations should have been conducted to estimate the life expectancy of the proposed treatment system.**

**EPA Response:** EPA disagrees. EPA used a present worth cost analysis to evaluate expenditures that occur over different time periods by discounting all future costs to a common base year. This allows the cost of remedial actions to be compared on the basis of a single figure representing the amount of money that, if invested in the base year and disbursed as needed, would be sufficient to cover all costs associated with the remedial action over its planned life. As stated in the **Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA** (OSWER Directive 9355.3-01, October 1988):

> "...In general, the period of performance for costing purposes should not exceed thirty years for the purpose of the detailed analysis".

In addition, the present value of operating costs beyond thirty years is considered minimal due to the extended length of time from the present base year used to discount future costs.

As stated in the FS and the Proposed Plan, there is some uncertainty associated with the length of treatment system operation due to the complex nature of ground-water flow through the fractured bedrock. Therefore, the cost estimate of the proposed remedy is based on an estimated time period of five to thirty years. The proposed ground-water remediation system would be monitored regularly for effectiveness, and if it is determined that the proposed remedy is not effective in extracting or treating contaminated ground water at the site, contingency measures may be taken, and the remedy may be reevaluated.

The uncertainty associated with remediation time frames has been discussed in the Record of Decision, consistent with EPA's ground- water guidance, noted in

comment D.3., above.

## F. Role of the Water Line

1. **A representative of one of the PRPs commented that EPA's analysis of site conditions and remedial alternatives should factor in the role of the provision of alternate water supply (water line) to potentially affected area residents.**

**EPA Response:** EPA did consider the provision of an alternate water supply (water line) to residents affected or potentially affected by the Higgins Farm site in its analysis of site conditions and the evaluation of ground-water remedial alternatives.

The provision of an alternate water supply is considered an interim solution for ground-water contamination, as it does not address the greater problem of restoring water to its beneficial uses. As stated in the Proposed Plan (July 1992), many area residents in the vicinity of the site depend on ground water as a potable water source. Although the water line provided some area residents with an alternate water supply, there remains the potential for contaminated ground water to continue to migrate off site to other residential wells. As determined in the risk assessment, exposure to the contaminated ground water could pose a threat to residents who utilize ground water as their potable water supply. Therefore, additional remedial measures are necessary to restrict the off-site migration of contaminants.

Section 121 of CERCLA, as amended, requires that each selected site remedy be protective of human health and the environment, be cost effective and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. The statute also includes a preference for the use of treatment to reduce toxicity, mobility, or volume of the hazardous substance:

> "Remedial actions in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment."
>
> CERCLA §121(b)(1)

Ground water at the site is classified by NJDEPE as IIA (potential or current drinking water source), and as levels of contamination are above federal and state drinking water standards, this remedial action, is necessary to treat contaminated ground water to restore it to its beneficial use, as well as restrict the off-site migration of contamination. As noted in the NCP:

> "EPA expects to return usable ground waters to their beneficial uses

wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site.....

40 CFR §300.430(a)(1)(iii)(F)